SOLUTIONS
- **VIRTUALIZATION**
- **DATA CONSOLIDATION AND MANAGEMENT**
- **BACKUP RECOVERY AND ARCHIVING**
- **GREEN IT**

CNETNETWORKS UK BUSINESS TECHNOLOGY AWARDS WINNER2007

A PRESCRIPTION FOR SUCCESS

UK hospital reduces server management and power consumption by 70 per cent and delivers new services faster with award-winning virtual infrastructure

Rapid expansion places significant demands on an organisation's IT infrastructure. Continually adding new hardware, however, can lead to an under-utilised server network that is both unreliable and expensive to manage.

Liverpool Women's NHS
NHS Foundation Trust

CUSTOMER PROFILE

COMPANY: Liverpool Women's NHS Foundation Trust

INDUSTRY: Healthcare

COUNTRY: United Kingdom

FOUNDED: 1798

EMPLOYEES: 1,600

WEBSITE: www.lwh.co.uk

CHALLENGE

Rapid server infrastructure expansion meant that Liverpool Women's Hospital – part of Liverpool Women's NHS Foundation Trust needed a consolidated infrastructure that would guarantee information availability and speed up the delivery of new services.

SOLUTION

Dell deployed a simplified, efficient, easy-to-manage environment based on Dell servers running VMware® virtualization software. A mirrored storage solution provides disaster recovery. Due to rapid uptake of the new system, the Trust then launched a second phase to further upgrade storage and increase automation.

BENEFITS

Get IT faster
- New infrastructure deployed in 20 weeks, upgraded in 12
- Data can be restored in 15 minutes with remote recovery solution

Run IT better
- Power consumption falls by 70 per cent
- Simplified management cuts administrative time by 70 per cent

Grow IT smarter
- Virtualization provides capacity for five years' growth

DELL

This was the case at Liverpool Women's NHS Foundation Trust – England's largest specialist women's healthcare provider. In 2007, the Trust delivered more than 8,048 babies and performed 900 IVF procedures for infertile couples. As operational requirements became more complex, the Trust's IT infrastructure grew more challenging. The number of servers storing data rose and employees found it increasingly time-consuming to locate information distributed around the network.

IT staff spent the majority of their time on routine operational work, rather than on strategic work or on documenting the infrastructure – a crucial stage in identifying areas for development.

With the existing storage system, data loss and subsequent interruption of services was also a constant threat, and network management became more costly.

The Liverpool Women's NHS Foundation Trust decided to implement a complete infrastructure upgrade. After studying the marketplace, the Trust turned to Dell, because of its expertise in implementing scalable infrastructures that combine advanced server performance with secure data storage.

Dell has been the Trust's preferred IT supplier for three years. Dr Zafar Chaudry, director of information management and technology, Liverpool Women's NHS Foundation Trust, says: "Dell's approach to understanding needs and providing solutions as opposed to pressuring customers is invaluable. Dell Infrastructure Consulting Services play a major role in the way that we work and the decisions we make – when we wrote our three-year strategy we had Dell's input. When we hire new staff, we have them on the interview panel. We also have a desk for Dell in our department."

Dell ran a number of workshops to analyse the Trust's key challenges. "Dell's approach meant we had clear understanding of the solutions available, and our decisions were well-informed," says Dr. Chaudry.

"THANKS TO VMWARE, WE'RE ACTUALLY RUNNING MORE SERVICES THAN WE WERE BEFORE, BUT USING LESS HARDWARE, AND 70 PER CENT LESS POWER. WE ALSO SPEND LESS ON COOLING BECAUSE OUR SERVER ESTATE GENERATES LESS HEAT."

Dr Zafar Chaudry, director of information management and technology, Liverpool Women's NHS Foundation Trust

Using Dell's expertise and its strategic alliance with VMware®, the Trust successfully deployed VMware ESX server software, running on Dell™ PowerEdge™ 2850 servers. This delivered a scalable architecture, while solving the problem of server sprawl. VMware software allows the creation of virtual machines within one server so that they run applications independently of one another on a single machine. "This reduced our physical servers from 30 to four," says Dr. Chaudry. They also installed a PowerEdge 1850 server. This runs VMware VirtualCenter, which provides a secure point of control for managing virtual computing resources.

To meet operational continuity and compliance needs, Dell installed two mirrored Dell I EMC CX500 storage area networks (SANs) – one onsite and another at a remote location. EMC MirrorView software is used to replicate all data between the SANs. So, if an outage occurs at the main site, the data remains available. Alongside this, a Dell PowerVault™ 132T LTO tape library provides long-term backup.

Clinical staff responded to the new system with enthusiasm, recognising that it gave the IT team the freedom to roll-out new services quickly and without prohibitive costs. With requests for new systems and applications increasing daily, Dr. Chaudry decided to upgrade the infrastructure. He again sought the advice of Dell Infrastructure Consulting Services. "Dell recommended we install VMware Infrastructure 3 (VI3), to give us faster recovery from outages, zero downtime maintenance and increased automation."

Alongside the software upgrade, Dell Infrastructure Consulting Services installed 10 new Dell PowerEdge 2950 servers to increase the capacity of the virtualized infrastructure. Dr. Chaudry says: "We consolidated our ratio of physical servers to virtual servers by another 50 per cent." The PowerEdge 2850 servers that were installed during the earlier phase of the project now run as risk-free test environments.

HOW IT WORKS

HARDWARE

- Dell™ PowerEdge™ 2850 server
- Dell PowerEdge 1850 server
- Dell PowerEdge 2950 server
- Dell PowerVault™ 132T LTO tape library
- Dell I EMC CX500 storage area network (SAN)
- Dell I EMC Centera content addressed storage (CAS) system

SOFTWARE

- VMware ESX server software Vi3
- EMC MirrorView
- VMware® VirtualCenter

SERVICES

- Infrastructure Consulting Services
  - Assessment, design and implementation
  - Storage
  - Virtualization
- ProSupport for IT

"BEFORE WE INTRODUCED VIRTUALIZATION, AVAILABILITY WAS 89 PER CENT – NOW IT'S 99.9. WITH ZERO DOWNTIME FOR UPGRADES AND PATCHES, WE CAN KEEP THE SYSTEM UP-TO-DATE WITHOUT WORRYING ABOUT DISRUPTING STAFF"

Dr Zafar Chaudry, director of information management and technology, Liverpool Women's NHS Foundation Trust

To complete the upgrade, Dr. Chaudry opted for a Dell | EMC Centera content addressed storage (CAS) system, which is helping the hospital to meet legal requirements for archiving patient information.

EXCELLENT PROJECT MANAGEMENT ENSURES SUCCESSFUL DEPLOYMENT

Choosing Dell Infrastructure Consulting Services (ICS) to drive the deployment of the consolidated infrastructure gave Dr. Chaudry and his team constant access to expert consultation services and management skills, with a project manager and team of technical experts taking responsibility for design and implementation. "I had complete faith in Dell's ability to respond to our needs with the right solution, and to deploy it quickly and without disruption."

POWER COSTS FALL BY 70 PER CENT

With 28 fewer physical servers, the Trust spends less on power. "Thanks to VMware®, we're actually running more services than we were before, but with less hardware, and 70 per cent less power. We've also cut cooling costs because our server estate generates less heat."

SIMPLIFED STORAGE IMPROVES SECURITY

Dr. Chaudry and his team now have the peace of mind that all data is stored on a centralised network with constant availability. The mirrored infrastructure removes the worry of losing critical data, and helps ensure that clinical staff will be able to access patient information if there is a power failure.

Dr. Chaudry explains: "If the primary site fails, we can restore all the data within 15 minutes. The next step is to automate this process with a rule that tells the servers to switch to the secondary site automatically. So we'll reduce management time even further, and remove the risk of human error or delay."

The team also uses EMC SnapView, which provides them with point-in-time snapshots of data at four hour intervals, helping them to monitor and regulate the system. They also use this software to quickly create copies of data for testing, backup and recovery. Meanwhile, using tools within the new Centera storage system, the IT team can now legally archive data – something they were previously unable to do. The system archives data in a way that means any email can be retrieved by a court of law. It also ensures that data cannot be modified, giving the team the peace of mind that all archived information remains valid.

AUTOMATION REDUCES MANAGEMENT TIME BY 70 PER CENT

In providing clinical staff with state-of-the-art technology, the IT team has also reduced the time needed to maintain the infrastructure. Staff log in to VMware VirtualCenter just once a month, and with further automation under VI3, this will fall to once every two months.

"We have two staff members who manage the servers, but in reality they rarely have to look at them – it's almost a case of zero maintenance. With VMware VirtualCenter Services, they can see the whole server estate in a single 'snapshot'. Plus, if there's a problem, the system sends us an email message automatically, so we don't have to spend time checking the system for errors," Dr. Chaudry says. These advanced automation features also decrease reliance on the specific skill sets of individuals who may leave a skills gap if they leave or go on holiday.

The additional time has allowed staff to focus on an important project: gaining ISO IS019001 certification. "Thanks to the time freed up by our simplified, virtualized infrastructure, we have become the first NHS organisation to achieve ISO 9001:2000 certification, which ensures quality operations in IT."

ADVANCED INFRASTRUCTURE INCREASES AVAILABILITY TO 99.9 PER CENT

As a result of the new environment consolidated on Dell™ PowerEdge™ servers running VMware, staff can now depend on technology that is consistently available. This means they can focus on patients, with the certainty that the technical resources they need will always be there. If the IT team needs to work on a server, they can use VMotion to migrate virtual machines to another physical server in minutes.

"Before we introduced virtualization, availability was 89 per cent – now it's 99.9. With robust servers and zero downtime for upgrades and patches, we can keep the system up-to-date without worrying about disrupting staff," says Dr. Chaudry.

These processes will soon become even simpler, when the team uses a rule in VI3 to automate server migration. "As with disaster recovery, we're setting up rules so that our servers automatically carry out pre-defined tasks in response to certain events. So, if we want a server to move a virtual server when the CPU reaches 80 per cent, we can tell it to do that every time."

VIRTUALIZATION PROMOTES INNOVATION

Now that the team can create new virtual servers in a matter of hours, rather than having to order new hardware, clinical staff are confident that their needs – and therefore the needs of patients – will be met quickly.

"The virtual infrastructure has changed the way that clinical employees perceive technology. Now, if a doctor thinks that a new system for analysing data from patient questionnaires would be useful, they come and ask us, because they know we can set it up in a matter of weeks."

When consultants asked for their own server space for experimenting with new applications, the IT team provided them with a risk-free test virtual environment. "We reallocated our existing Dell servers to provide the hospital's consultants with a risk-free development space that can be reconfigured and then rolled back to its original state infinitely. So, they have the opportunity to be innovative, without worrying about the cost of making mistakes."

AWARD-WINNING INFRASTRUCTURE REFLECTS FORWARD-THINKING APPROACH

The new system has won three awards:

- 2007 Information Age (UK) Effective IT Award Winners for:
  - Most Effective Use of IT in Public Services (Virtualized infrastructure)
  - Most Effective Enterprise-Wide Infrastructure (Virtualized infrastructure)
- 2007 Computerworld (USA) Gold Medal Winner (Virtualized infrastructure)
- 2007 CNET (UK) award for public sector IT project of the year

The hospital was also a finalist for the 2007 BCS (UK) Public Sector project of the year. In addition, the hospital headed a round table event for CIOs and directors, sponsored by Dell, to address common technical challenges faced by organisations in a variety of fields.

Dr. Chaudry says: "The virtual infrastructure has generated a lot of interest. It's great that we can demonstrate our approach to other organisations and show them how this technology has reduced complexity, promoted innovation, and met budgetary requirements."

PARTNERSHIP WITH DELL PROVIDES IN-DEPTH APPRECIATION OF BUSINESS NEEDS

With ProSupport for IT with Mission Critical covering all purchases, the Trust has enterprise-wide four-hour onsite support in the event of issues. This helps to safeguard against downtime. Dr. Chaudry and his team also have direct phone access to expert technicians, along with a dedicated primary point of contact for all projects.

Dr. Chaudry says: "We see Dell as a partner that understands and supports our ultimate objective – to implement systems that drive efficiencies, encourage innovation, and improve patient care. With Dell, we have advice we can trust, access to expert technical knowledge, and rapid resolution of issues."

To find out more about Liverpool Women's Hospital mobility solution, please see additional case study at www.dell.co.uk/casestudies

Liverpool Women's NHS
NHS Foundation Trust

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